

## **GSM Alliance**

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**American Portable Telecom (APT) is an independent provider of Personal Communications Services headquartered in Chicago. APT was the successful bidder for six major broadband PCS - licenses throughout the United States. APT is a subsidiary of Telephone and Data Systems, Inc., (TDS), a diversified telecommunications company which provides local telephone, cellular and paging services to more than 1.8 million customers in 37 states and the District of Columbia.**

**BellSouth is one of the world's wireless leaders, having wireless operations in the U.S. and 14 other countries. The company serves more than 4.8 million wireless customers and is a leader in the development of PCS, having conducted five PCS-related trials, including technical and marketing tests in the U.S.**

**Omnipoint is a world leader in the commercialization of spread spectrum radio systems. Omnipoint was recognized by the Federal Communications Commission (FCC) for its many innovations in PCS with the award of a Pioneer Preference 30 Mhz license for the New York Major Trading Area.**

**Pacific Bell Mobile Services is the wireless subsidiary of Pacific Bell. Pacific Teleis Group, the parent company of Pacific Bell and PBMS, is a diversified telecommunications corporation headquartered in San Francisco.**

**Western Wireless Corporation (WWC), headquartered in Bellevue, WA., is a primary provider of wireless communication in the rural United States, including cellular messaging and personal communications services. WWC owns and operates non-wireline cellular telephone systems in 70 markets. WWC was awarded PCS licenses in six Major Trading Areas and during 1996 will establish facilities to provide wireless services in those markets. The combined cellular and PCS licenses encompass 20 million potential subscribers and approximately 40 percent of the land in the continental United States and Hawaii.**

**###**

**GSM Alliance  
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**EXHIBIT 8**  
**ENGINEERING STATEMENT OF**  
**DR. CHARLES L. JACKSON**

## **Affidavit of Dr. Charles L. Jackson**

I, Charles L. Jackson, being duly sworn, depose and say:

1. My name is Charles L. Jackson. My business address is Strategic Policy Research, Inc., 7500 Old Georgetown Road, Bethesda, Maryland. I am a Principal in Strategic Policy Research, Inc. By training, I am an engineer. I received the B.A. degree in Applied Mathematics from Harvard University with honors. I received the M.S., E.E., and Ph.D. degrees in Electrical Engineering from the Massachusetts Institute of Technology. At MIT, I was honored by promotion to faculty rank while still a graduate student and election to the scientific honor society, Sigma Xi. Early in my career, I worked as a digital designer and computer systems engineer. I have worked for over twenty years in the telecommunications field, including positions on the staffs of the Communications Subcommittee of the U. S. House of Representatives and the Federal Communications Commission. I have testified before the Commission, several state public utility commissions and Congressional committees on policy and technology issues in communications. I have served as chairman of the board of the annual Telecommunications Policy Research Conference. I currently serve on the Department of Commerce's Spectrum Planning and Policy Advisory Committee ("SPAC"). I have written and spoken extensively on communications policy issues. Attachment A is a full statement of my background and qualifications.

2. The purpose of this statement is to describe my finding, based upon examination of publicly available materials, that Omnipoint, a Pioneer's Preference PCS licensee for the New York MTA, appears to be building a PCS system based upon GSM technology with only minor or negligible elements of the specific technology for which it was granted a Pioneer's Preference. I provide an overview of the FCC's Pioneer's Preference policy and Omnipoint's licensing under that policy. I then review a variety of public statements about the system Omnipoint is building in the New York MTA. Finally, I offer my conclusion that the system that Omnipoint is building in the New York MTA does not "substantially use" the technology on which Omnipoint's PCS pioneer's preference was granted.

3. The FCC pursued a long and difficult course to put in place its PCS rules. While critics may disagree with some details of the PCS rules, I think no one can dispute that the FCC authorization of PCS has greatly advanced our nation's welfare. PCS will benefit consumers in many ways — from providing more convenient mobile communications to ensuring price competition with cellular and eventually even with traditional local exchange telephone service.

4. The FCC issued a Notice of Proposed Rulemaking for the PCS service in June 1990, and final rules were adopted in June, 1994. Auctions of the A and B band licenses were held beginning later in 1994. C band auctions are now underway. PCS systems are being built out, and service has been demonstrated in several cities. The Sprint system in Washington, D.C. is operational and is reported to have signed up thousands of subscribers.

5. In parallel to the PCS proceeding, the FCC was refining its pioneer's preference rules (47 CFR 1.402). Under those rules the FCC can reward those who "pioneer" a technology by granting them a license without participating in an auction, comparative hearing, or lottery. In the wideband PCS proceeding, the Commission granted a Pioneer's Preference to three parties, APC (now offering service under the Sprint name), Cox, and Omnipoint. At the time the FCC granted these Pioneer's Preferences it said

To ensure the integrity of our pioneer's preference policies, we are directing the relevant licensing bureau to condition each 2 GHz PCS license obtained through the pioneer's preference policy upon the licensee building a system that substantially uses the design and technologies upon which its preference award is based. . . . It is inherent in our pioneer's preference policy that the innovator use the technology upon which its preference is based.

[Third Report and Order, PCS, December 23, 1993, para. 8]

The Commission's policy concern here is clear. To the extent that a pioneer's preference is a reward for pioneering a technology, the Commission should assure that the pioneer truly implements the technology for which they received a preference. If the Commission gave a firm a license preference because that firm had developed an innovative data communications technology, it would be wrong for the firm to use the license received under the preference for

traditional FM aural broadcasting. The Commission's rules were intended precisely to prevent this type of regulatory "bait and switch."

6. An important issue in interpreting the Commission's rules is the proper meaning of "substantially uses the design and technologies upon which its preference award is based." I believe that the reasonable interpretation is that the firm builds a PCS system using the technology it pioneered, albeit with some unsubstantial variations. I believe that both the language of the Commission's order and reflection upon their underlying policy purpose make the Commission's intent clear. A firm receiving a pioneer's preference for a PCS license must build their system using the technology they pioneered; that technology may be improved and refined as long as the changes are only in degree and not in kind. For example, suppose a pioneer had designed an innovative PCS system that, among other features, used a specific 10 kbps vocoder from another company — call it Company X. Suppose further that, during the time between requesting the preference and commencing system construction, Company X had brought to market a similar but better vocoder also operating at 10 kbps. In all circumstances I can conceive, substituting the improved Company X vocoder for the original Company X vocoder would not result in a substantial change in system architecture. In a similar fashion, slight changes to bit rates or channelization would not constitute substantial changes to the system architecture. At the other extreme, changing the power levels, system bandwidths, modulation, and multiplexing of the system all at once would clearly constitute very substantial changes. In most circumstances, I would regard changes to modulation and multiplexing to be highly likely to create substantial system changes.

7. I have reviewed a variety of data sources describing the system Omnipoint is building in the New York MTA. These include:

- The application for initial PCS authorization which Omnipoint filed with the FCC on April 28, 1994,
- A Nortel press release dated September 19, 1995,

- An article in *Wireless Digest*, November 24, 1995,
- The Omnipoint Prospectus (SEC Form S-1), filed October 19, 1995,
- An article in the December 18, 1995 Forbes Magazine, and
- An item in the December 14, 1995 *Communications Daily*.

I also reviewed two documents that describe the technology for which Omnipoint received its Pioneer's Preference award:

- Omnipoint's May 4, 1992 Request for a Pioneer's Preference, and
- A General Description of the Composite CDMA/TDMA System (IS-661) JTC(AIR)/95.08.03-274.

8. Omnipoint made a number of claims for its technology in its pioneer's preference request including:

"Omnipoint's system is significantly different from other spread spectrum system and is designed for shared operation with existing Operational Fixed Services." [Request, p. 2]

"Omnipoint uses 10 MHz and sub 10 MHz Time Division Duplexed and can combine it with Frequency Division Duplexed channelization for the reasons discussed above. Coupled with Dynamic Channel Allocation this minimizes interference to the analog OFS users and matches the existing channelization scheme." [Request, p. 26]

"Operational TDD direct sequence is one of Omnipoint's original major accomplishments." [Request, p. 27]

"Advantages of Omnipoint's Spread Spectrum over Narrowband Systems. The two most widely proposed narrowband systems for various PCS services are CT2 and the GSM/DCS-1800 systems." [Request, p. 30]

"An innovative spectrum sharing RF system which will allow a phased in approach to coexist with the incumbent OFS users." [Request, p. 32]

9. Omnipoint's statements in their SEC Form S-1 vary substantially from the claims in the Request. In its October 1995 disclosure to investors Omnipoint states:

"The buildout of the network is subject to . . . satisfactory accommodation of microwave users currently using the spectrum." [Prospectus, p. 4]

"The Company intends **to deploy a pilot system** in Manhattan using the Omnipoint System in early 1996. The Company plans to build its network integrated with a GSM system in order to provide mobile and fixed telephone services, to provide roaming capability with other GSM based networks, and to facilitate being first to market." [Prospectus, p. 19, emphasis supplied]

As shown above (paragraph 8), Omnipoint, in its pioneer's preference request, made strong statements that its system design could coexist with operational fixed microwave systems. Yet, in its disclosure to potential investors, Omnipoint speaks of the need to accommodate incumbent microwave operations. Accommodating microwave users is, of course, necessary if Omnipoint is actually building a GSM-based network. The statement to investors make it clear that Omnipoint intends to do just that. Note that Omnipoint, in its pioneer's preference request, explicitly contrasted its technology (for which it was requesting a pioneer's preference) with the older GSM technology that was operational in Europe well before the beginning of the FCC's PCS process.

10. The Omnipoint Prospectus also states that Omnipoint has signed a memorandum of understanding with Pacific Bell Mobile Systems to provide roaming services in areas where the two companies have PCS licenses. [Prospectus at p. 18] Based upon reading the trade press and conversations and meetings with staff of Pacific Bell Mobile Systems, I believe that Pacific Bell is building a GSM-based PCS system. Consequently, for Omnipoint to be able to provide roaming service to subscriber units from the Pacific Bell system requires the Omnipoint system to support GSM-only units.

11. Other sources paint a similar picture of Omnipoint's activities. A September 19, 1995 Press Release by Nortel (formerly Northern Telecom) asserts that Omnipoint has placed a \$100 to



\$250 million order for a GSM-based PCS network equipment and services. Nortel's press release states:

The agreement **also** calls for initial deployment of a pilot Personal Communications Services (PCS) network, using Omnipoint's IS-661 technology, in the Wall Street financial district of New York City by the end of 1995. [Emphasis added].

An article by Fleming Meeks in the December 18, 1995 issue of *Forbes* magazine was generally critical of the CDMA technology under consideration for PCS use. Meeks quoted Nokia's manager of PCS as saying CDMA would probably not have a major market presence before mid-1997. Meeks also wrote:

'I think Nokia's prediction is not far off,' says George Schmitt, who quit his job as head of PCS PrimeCo in August after battling the board over, among other things, the decision to go with CDMA. He now runs Omnipoint, which will come to market with a GSM-based digital wireless system in New York late next year. [p. 45]

A similar statement is found in *Wireless Digest* (a newsletter published on the Internet by LanSer Wireless Inc.) for November 24, 1995. An article describing PCS providers forming a North American interest group to promote GSM technology, lists Omnipoint among the seven participants in the group. The article goes on to state:

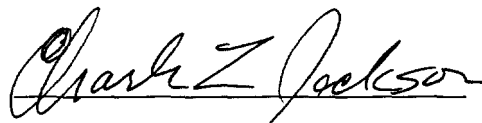
All the companies plan to use a technical platform called 'Global System for Mobile Communication,' or GSM — a digital communications technology adopted by more than 150 wireless providers in nearly 80 countries around the world. The GSM platform supports the PCS 1900 standard as well as the IS-661 standard which members of the group will be trialing. [p. 3]

On December 14, a short item appeared on page 6 of *Communications Daily* describing an agreement between Omnipoint and Ericsson for Ericsson to supply PCS 1900 and IS-661 (Omnipoint system) hardware to Omnipoint for use in the New York PCS system.


12. The economic incentives facing Omnipoint are clear. Its PCS operation in the New York MTA must compete with two licensed cellular providers, another licensed PCS provider, and any other PCS providers that gain licenses in the further PCS auctions. Omnipoint must offer service at a competitive price if it is to be viable in the market. Unless Omnipoint's technology has substantial operational advantages, that technology will not be as economical as using more established technologies. Using GSM technology gives Omnipoint access to proven PCS technologies being produced in large quantities for world markets. This gives Omnipoint the advantages of economies of scale in equipment manufacture. Using GSM technology avoids the marketing problems associated with promoting a little-used technology that may turn out to be an orphan. Thus, there are strong economic forces pushing Omnipoint towards the use of GSM (or another proven PCS technology) rather than the technology on which its pioneer's preference application was based. The substantial advantages provided to Omnipoint by the pioneer's preference are a sunk benefit — they do not affect Omnipoint's economic incentives when choosing the technology for building its system. But, of course, the Commission's intent was just exactly opposite. The purpose of granting pioneer's preferences is to assist the development of new technologies that must overcome economic hurdles to make it in the marketplace. One justification for the FCC's pioneer's preference policy is that the public gains spillover benefits from innovation in wireless systems — hence the Commission may properly give such innovators economic preference denied to other competitors.

13. Based upon the evidence available to me, I conclude that Omnipoint is building a GSM system with some minor use of its IS-661 access technology in a "trial" in Wall Street. Among the most telling evidence, Omnipoint's system will support subscriber units that operate only using the GSM standard. Yet, in their request for a pioneer's preference Omnipoint explicitly contrasted their technology with the GSM technology. My belief that GSM and the Omnipoint technology are very different agrees with Omnipoint's position in its pioneer's preference request. The technology for which Omnipoint received its preference appears to play a negligible role in

the service Omnipoint is actually offering. Thus, it does not appear (on the basis of evidence I have discovered) that the system Omnipoint is building in the New York MTA is "substantially" based upon the design and technologies upon which Omnipoint requested a pioneer's preference.

  
Charles L. Jackson

Subscribed and sworn to before me this 20<sup>th</sup> day of December, 1995.

  
Notary Public

ADRIENNE WELLS VENDIG  
NOTARY PUBLIC STATE OF NEW YORK  
My Comm. Expires 01/01/2000